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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,708	06/26/2003	Douglas M. Beall	SP02-146	5076
22928	7590	04/07/2006	EXAMINER	
CORNING INCORPORATED			GREENE, JASON M	
SP-TI-3-1			ART UNIT	
CORNING, NY 14831			PAPER NUMBER	

1724

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/606,708

Applicant(s)

BEALL ET AL.

Examiner

Jason M. Greene

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-22 is/are allowed.
- 6) ☒ Claim(s) 23-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

### ***Response to Arguments***

1. Applicant's arguments, see page 6, lines 5-11, filed 17 January 2006, with respect to the objection to claims 8-10 have been fully considered and are persuasive. The objection to claims 8 and 9 has been withdrawn.

2. Applicant's arguments filed 17 January 2006 have been fully considered but they are not persuasive.

With regard to Applicants' argument that Merkel and Beall are not properly combinable, the Examiner notes that the Merkel reference teaches a filter having the claimed pore structure and the only difference between the claimed method and the method of Merkel is the raw material used for providing magnesium oxide. Since both the Merkel and Beall references are directed to methods for producing cordierite filters, one of ordinary skill in the art would have recognized that the raw materials of Beall could be incorporated into the method of Merkel. Furthermore, since Merkel teaches the claimed pore structure, there is no need to "further modify" Merkel as argued by Applicants.

With regard to Applicants' arguments that Beall fails to provide a "clear and particular" teaching or suggestion for using MgO as a raw material source, the Examiner notes that Merkel discloses only two magnesium oxide sources (i.e. talc and MgO) in Table A. Since the number of disclosed raw materials is so small, the teaching meets the "clear and particular" requirement since one of ordinary skill would only have to select from amongst two raw materials. While Beall does not provide specific examples using MgO, one of ordinary skill would readily recognize how to use MgO to produce cordierite based on stoichiometry. Furthermore, since Merkel already teaches the desired pore structure, it would be a matter of routine experimentation to use MgO in place of talc to produce an identical pore structure. In other words, since Merkel already teaches producing a filter having the claimed structure using talc, merely substituting MgO for the talc to produce an identical structure does not impart patentability to the method.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 23, 24 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merkel in view of Beall et al. (U.S. Patent Application Publication

2002/0004445 A1) or Published International Application WO 01/91882 A1. The Examiner notes that the WO 01/91882 reference is equivalent to the Beall reference and has a publication date greater than 1 year prior to the effective filing date of the instant application.

With regard to claims 23, 33 and 34, Merkel discloses a method for fabricating a wall-flow filter comprising forming a batch of raw materials comprising talc, alumina, and silica raw materials in combination with extrusion aids comprising 3 percent by weight methylcellulose as binder, 0.5-1.0 percent by weight sodium stearate as lubricant, plasticizing and shaping the batch, wherein shaping is done through an extrusion die to form a green honeycomb body having an inlet end, an outlet end, and a multiplicity of cells extending from the inlet end to the outlet end, drying and firing the green honeycomb body at a rate of 15-100 °C/hr to a maximum temperature of 1405-1430 °C, with a hold of 6-25 hrs. to form a structure which is predominately of a phase approximating the stoichiometry of  $\text{Mg}_2\text{Al}_4\text{Si}_5\text{O}_{18}$  (cordierite) and has a coefficient of thermal expansion over a range of 25-800 °C of  $6 \times 10^{-7}/^\circ\text{C}$ , and plugging a first portion of cells at the inlet end, and a second portion of cells at the outlet end such that each cell is plugged at only one end in col. 1, line 55 to col. 8, line 62. Specifically, Merkel discloses the green honeycomb body being fired by heating to a maximum temperature of 1410 °C at a rate of 25 °C/hr with a hold of 8 hrs in Example 1 in Table 2.

Merkel does not disclose the batch of raw materials comprising magnesium oxide or the honeycomb exhibiting a pore size distribution such that  $d_{50}/(d_{50}+d_{90})$  is less than

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0.70 or the soot loaded permeability factor is less than 1.55.

As noted in the previous action, Beall et al. teaches forming a similar honeycomb structure satisfying the recited pore size distribution properties in Example D2 in Table D on pages 8-9. WO 01/15062 teaches the same honeycomb structure in Example D2 in Table D on pages 25-26.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the final pore structures of the filters of Beall et al. and WO 01/15062 into the method of Merkel to produce honeycomb filters having high volumetric heat capacity and a low pressure drop across the length of the filters, as taught by Beall et al. in paragraph 0015.

Beall et al. and WO 01/91882 A1 teach using MgO as a raw material in Table A on pages 7 and 20, respectively.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the MgO of Beall et al. and WO 01/91882 A1 for the talc of Merkel in that such are alternate raw materials in the art for the production of cordierite honeycomb bodies. Mere substitution of one known cordierite forming raw material for another in the art without a showing of unexpected or unobvious results being within the scope of one having ordinary skill in the art. As noted above, since one of ordinary skill in the art could select an appropriate MgO material to provide the recited pore structure through routine experimentation, such a limitation is not seen as showing unexpected or unobvious results.

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With regard to claim 24, Merkel discloses the batch further including spinel having a stoichiometry of  $\text{MgAl}_2\text{O}_4$  in col. 2, lines 62-63.

With regard to claims 30-32, Merkel discloses the magnesium oxide being supplied by magnesium oxide, the alumina being supplied by aluminum oxide or boehmite, and the silica being supplied by fused silica.

5. Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merkel, Beall et al. and WO 01/91882 A1 as applied against claim 23 above, and further in view of Hamaguchi et al.

Merkel does not disclose the batch further including a pore former having a median particle diameter of 3-140 micrometers.

Hamaguchi et al. discloses a similar method of making a filter wherein the batch includes a graphite pore former having a median particle diameter of 40 micrometers in col. 3, lines 65-68 and Table 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the graphite pore former of Hamaguchi et al. into the method of Merkel to allow the porosity of the filter to be adjusted, as suggested by Hamaguchi et al. in col. 3, lines 65-68.

***Allowable Subject Matter***

6. Claims 1-22 are allowed.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason M. Greene  
Primary Examiner  
Art Unit 1724

  
3/31/06

jmg  
March 31, 2006